**Listing of the Claims:**

Claim 1 (Currently amended): A method for forming an electrically conductive layer having patterns for semiconductor devices, comprising the steps of:

providing a substrate;

forming a ~~non-functional insulation layer~~ first insulation layer on the substrate;

forming a ~~functional insulation layer~~ second insulation layer on the ~~non-functional insulation layer~~ first insulation layer, the ~~functional insulation layer~~ second insulation layer having predetermined functional groups;

forming a patterned polymer layer having the patterns on the ~~functional insulation layer~~ second insulation layer;

etching the ~~functional insulation layer~~ second insulation layer in accordance with the patterns of the patterned polymer layer to create a patterned insulation layer;

stripping the patterned polymer layer to expose the patterned insulation layer;

treating the patterned insulation layer with a coupling agent reacting with the predetermined functional groups;

treating the patterned insulation layer with a catalyst-containing solution; and

depositing electrically conductive material on the patterned insulation layer.

Claim 2 (Original): The method of claim 1, wherein the predetermined functional groups include OH functional groups.

Claim 3 (Currently amended): The method of claim 2, wherein the ~~functional insulation layer~~ second insulation layer is a silicon oxide ($SiO_x$) layer.

Claim 4 (Original): The method of claim 1, wherein the catalyst-containing solution includes a catalyst selected from the group including palladium (Pd), platinum (Pt), tin (Sn), nickel (Ni), and any alloy thereof.

Claim 5 (Currently amended): The method of claim 1, wherein the ~~functional insulation layer~~ second insulation layer has a thickness between about 1 nm and about 10 nm.

Claim 6 (Original): The method of claim 1, wherein the patterned polymer layer is formed by photolithography or micro-contact printing.

Claim 7 (Original): The method of claim 1, wherein the patterned polymer layer has a thickness between about 50 nm and about 100 nm.

Claim 8 (Previously amended). The method of claim 1, wherein the patterned polymer layer comprises a solvent soluble polyimide.

Claim 9 (Original): The method of claim 1, wherein the catalyst-containing solution has a catalyst making a bonding reaction with the coupling agent.

Claim 10 (Original): The method of claim 9, wherein the catalyst-containing solution is selected from the group including a Pd/Sn colloidal mixture, an aqueous solution of $PdCl_2$, and any mixture thereof.

Claim 11 (Original): The method of claim 9, wherein the step of treating the patterned insulation layer with the catalyst-containing solution includes making surfaces of the patterned insulation layer catalytically active, so that the electrically conductive material is deposited on the catalytically active surfaces of the patterned insulation layer.

Claim 12 (Original): The method of claim 1, wherein the coupling agent is a silane coupling agent, and the predetermined functional groups are OH functional groups.

Claim 13 (Original): The method of claim 1, wherein the electrically conductive material is selected from the group including copper, silver, palladium, nickel, cobalt, gold, platinum, and any alloy thereof.

Claim 14 (Canceled).

Claim 15 (Currently amended): A method for forming an electrically conductive layer having patterns for semiconductor devices, comprising the steps of:

providing a substrate;

forming a ~~non-functional insulation layer~~ first insulation layer on the substrate;

forming a ~~functional insulation layer~~ second insulation layer on the ~~non-functional insulation layer~~ first insulation layer, the ~~functional insulation layer~~ second insulation layer having predetermined functional groups;

forming a patterned polymer layer having the patterns on the ~~functional insulation layer~~ second insulation layer, the patterned polymer having a coupling agent;

etching the ~~functional insulation layer~~ second insulation layer in accordance with the patterns of the patterned polymer layer to create a patterned insulation layer;

stripping the patterned polymer layer to expose the patterned insulation layer;

treating the patterned insulation layer with a catalyst-containing solution; and

depositing electrically conductive material on the patterned insulation layer.

Claim 16 (Currently amended) The method of claim 15, wherein the coupling agent in the patterned polymer layer reacts with the predetermined functional groups in the second insulation ~~insulating~~ layer.

Claim 17 (Original) The method of claim 16, wherein the coupling agent is a silane coupling agent and the predetermined functional groups are OH functional groups.

Claims 18-21 (Canceled).

Claim 22 (Currently amended): A method for forming an electrically conductive layer having patterns for semiconductor devices, comprising the steps of:

providing a substrate;

forming a ~~functional insulation layer~~ first insulation layer on the substrate;

forming a ~~functional insulation layer~~ second insulation layer on the ~~non-functional insulation layer~~ first insulation layer, the ~~functional insulation layer~~ second insulation layer having predetermined functional groups;

forming a patterned polymer layer having the patterns on the ~~functional insulation layer~~ second insulation layer, the patterned polymer comprises solvent soluble polyimide;

etching the ~~functional insulation layer~~ second insulation layer in accordance with the patterns of the patterned polymer layer to create a patterned insulation layer;

stripping the patterned polymer layer to expose the patterned insulation layer;

treating the patterned insulation layer with a catalyst-containing solution; and

depositing electrically conductive material on the patterned insulation layer.